MIPAV Frequently Asked Questions

Memory

Customizing MIPAV

Image Basics

Memory

How do I allocate more memory for MIPAV?

1 Select **Help > Memory Allocation** in the MIPAV window. The Change Java.Runtime Memory Allocation dialog box (Figure 1) opens.

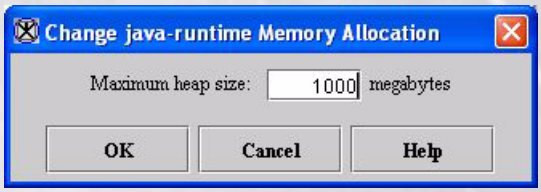

Figure 1. Change Java.Runtime Memory Allocation dialog box

2 Change the Maximum heap size so that it reflects the maximum amount of desired memory to be allocated.

If additional memory is needed, MIPAV allocates it until the memory reaches the maximum heap size you entered.

Note: The maximum heap size should not exceed the amount of RAM installed on the computer. For example, if the computer has 512 Kb of RAM, a good number for the maximum heap size is 450 Kb, which leaves some space for the operating system and other applications.

The Changing Settings message (Figure 2) appears.

Figure 2. Changing Settings message

3 Click **OK**.

4 Close MIPAV by selecting **File > Exit - MIPAV**.

5 Restart MIPAV for the changes to take effect.


BACK TO QUESTIONS

How much memory does MIPAV require to run?

MIPAV requires a base of at least 10 Mb of random access memory (RAM). However, to correctly display image files and to quantify the data, you need to allocate more memory, disk swap space, or install additional memory beyond this base. Each time MIPAV is installed, it always defaults to 100 Mb.

Important: If you reinstall MIPAV, be sure to reset the memory allocation.


BACK TO QUESTIONS

What affects memory requirements?

Memory requirements fluctuate depending on the size and number of image files that are open at the same time. Factors affecting memory requirements are the following:

- **Size of image files:** The physical size of image files (i.e., 1.2 Mb)
- **Number of image files opened:** Working on more than one image file at the same time

Note: Java provides a method called Garbage Collector that clears all unnecessarily reserved memory. Generally, the software does this automatically, when free memory becomes very limited. However, you can run the Garbage Collector at any time to free memory (refer to “How do I free memory?”).


BACK TO QUESTIONS

How do I determine the amount of additional memory needed?

To determine the amount of additional memory needed:

1. Multiply the size of the largest image file that you want to process by 10.
2. Multiply the results by the number of image files that you want to display simultaneously.
3. Add this amount to the 10-Mb base memory to result in the total amount of memory typically needed.`

Example 1

If an image file is 2 Mb and you only want to display one image file at a time, you must allocate an additional 20 Mb of RAM to the base memory of 10 Mb to result in a memory requirement of 30 Mb.

```
   2 Mb Size of image file
x 10
------
  20 Mb Memory required for displaying and processing 1 image file
 +10 Mb Base memory required for running MIPAV
------
  30 Mb Total memory required
```

Example 2

If the largest size image file is 2 Mb and you want to display 3 image files simultaneously, multiply 2 Mb by 10. Then multiply that sum by 3. Add that total to the base memory of 10 Mb to yield a memory requirement of 70 Mb.

```
   2 Mb Largest size image file
x 10
------
  20 Mb Memory required for displaying 1 image file
x   3 Number of images to display and process simultaneously
------
  60 Mb Memory required to display 3 image files
+ 10 Mb Base memory required for running MIPAV
------
  70 Mb Total memory required
```

BACK TO QUESTIONS

How do I determine how much memory is currently being used?

In the MIPAV window, select **Help > Memory Usage**. The Memory Monitor dialog box (Figure 3) appears.

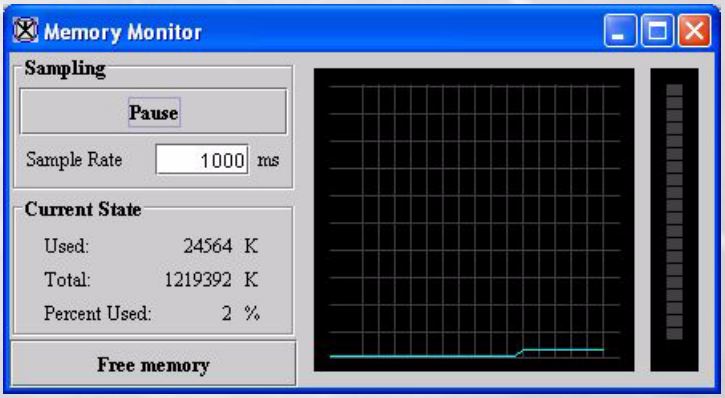

Figure 3. Memory Monitor dialog box

The Memory Monitor dialog box shows how much memory is allocated and the amount of memory that is being used. The graph displays a pictorial representation of the ratio of allocated memory and amount of memory used. It shows the memory usage during the past 3 minutes and 45 seconds.

Note: You can leave this window open if you want to constantly monitor your memory resources.

BACK TO QUESTIONS

How do I free memory?

The Garbage Collector allows you to delete unnecessarily reserved memory. To free memory, do the following procedure periodically:

1. Select **Help > Memory Usage** in the MIPAV window. The Memory Monitor dialog box (Figure 3) appears.

2. Click **Free Memory**. The system clears all unnecessarily reserved memory.


BACK TO QUESTIONS

Customizing MIPAV

How do I show or hide the splash screen?

The splash screen is the screen that first appears when you start MIPAV. It displays the name of the product.

To hide the splash screen

1 Select **Help > Program Options** in the MIPAV window. The MIPAV Options dialog box (Figure 4) opens.

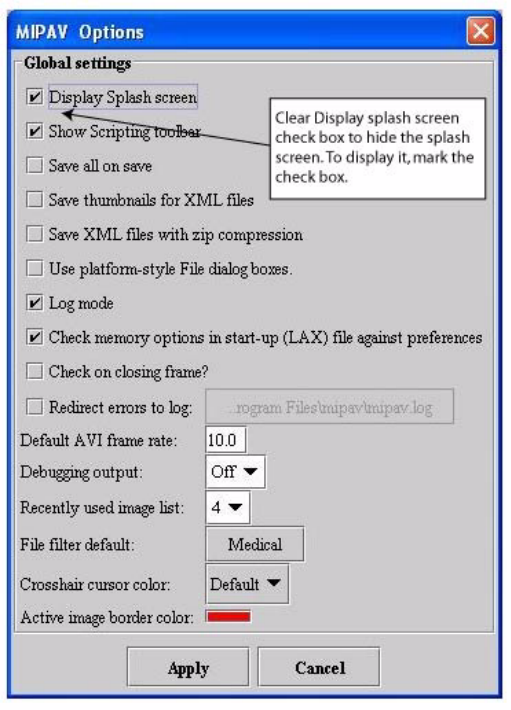

Figure 4. MIPAV Options dialog box

2 Clear the **Display Splash Screen** check box.

3 Click **Apply** and then click **Close**. The next time you start MIPAV, the splash screen does not appear.

To show the splash screen

1. Select **Help > MIPAV options** in the MIPAV window. The MIPAV Options dialog box (Figure 4) appears.
2. Mark the **Display Splash Screen** check box.
3. Click **Apply** and then click **Close**. The splash screen appears the next time you start MIPAV.

BACK TO QUESTIONS

How do I show or hide toolbars?

MIPAV has four toolbars, which you can choose to display or hide at any time an image is open. The toolbars are:

- **VOI—**Volume of interest. The VOI toolbar (Figure 5) contains tools that help you in selecting the specific area of interest on the image.

Figure 5. VOI toolbar

- **Paint—**The paint toolbar (Figure 6) includes tools that allow you to add, adjust, or remove colors and color intensity, to erase paint, and adjust the opacity level of the paint.

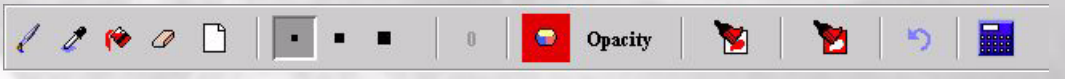

Figure 6. Paint toolbar

- **Scripting—**The scripting toolbar (Figure 7) allows you to run, record, and store scripts.

Figure 7. Scripting toolbar

- **Image—**The image toolbar (Figure 8) includes tools for opening, printing, saving, maximizing, and minimizing an image; converting an image from gray to color or from color to gray; and adding to and removing slices from an image or changing their order, rotating, cropping and flipping an image.

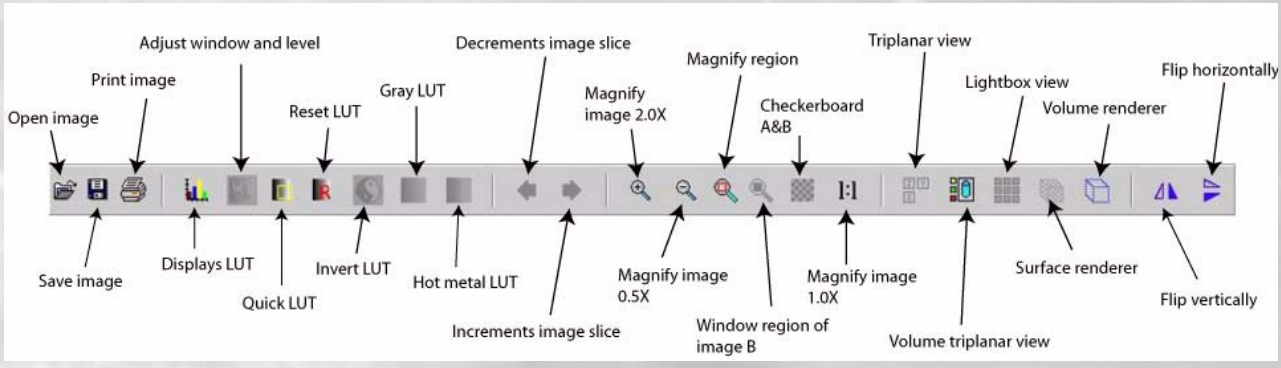

Figure 8. Image toolbar

To show or hide a toolbar

1 Start MIPAV. The initial MIPAV window (Figure 9) and the Output window (Figure 9) open.

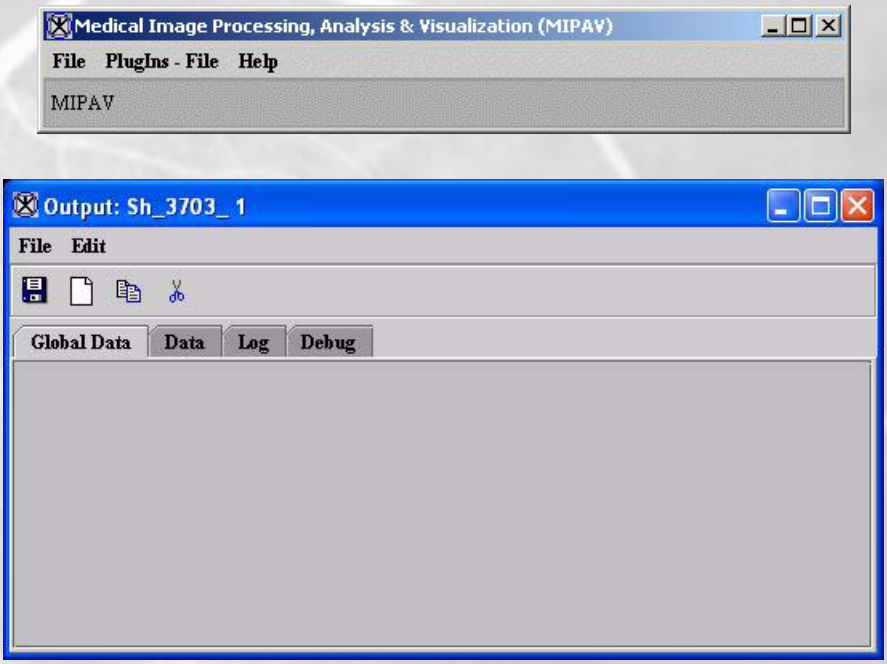

Figure 9. Initial MIPAV window (top) and Output window (bottom)

2 Open an image file to display all of the menus in the MIPAV window. The expanded MIPAV window appears showing all of the menus.

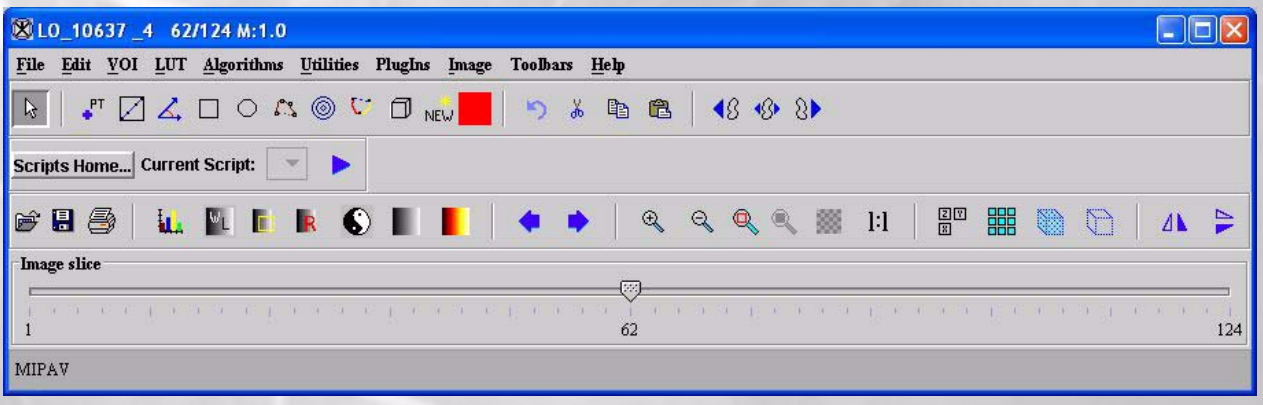

Figure 10. Expanded MIPAV window

3 Select **Toolbars**.

Figure 11. Toolbars menu

4 Select the name of the toolbar in the Toolbar menu that you want to hide or show.

Note: Blank check boxes indicate that the toolbar is hidden. Marked check boxes mean that the toolbar is currently displayed.

Depending on whether the toolbar is displayed, in a few moments, MIPAV refreshes the MIPAV window with the changes you made.

BACK TO QUESTIONS

How do I record my actions on images?

MIPAV allows you to record a record of all of the algorithms that were applied on images during a session. To do this, you need to place MIPAV in a *log mode*. The log records the applied algorithms and the parameters entered. It also records whether the algorithms completed successfully.

To turn on the log mode

1. Start MIPAV. The MIPAV and the Output windows (Figure 9) open.

2. Open an image file. The expanded MIPAV window appears showing all of the menus.

3. Select **Help > Program Options** in the MIPAV window. The MIPAV Options dialog box (Figure 12) opens.

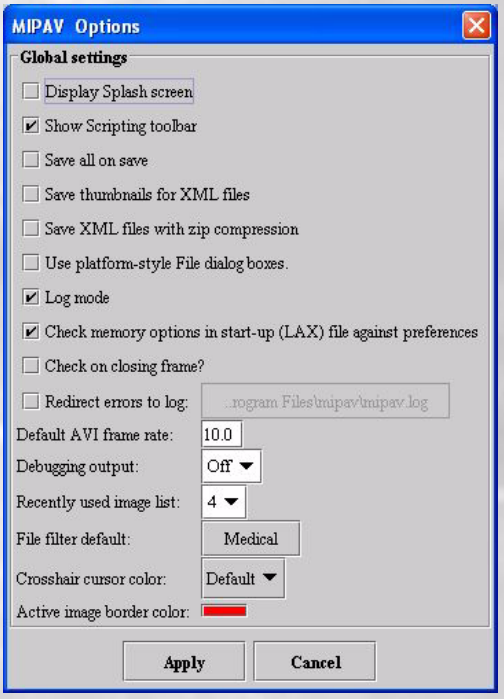

Figure 12. MIPAV Options dialog box showing Log mode selected

4. Select, if it is not already selected, **Log mode**. (By default, Log mode is selected.)

5 Click **Apply**.

6 Click the Log tab in the Output window. The Log page (Figure 13) appears.

As you run algorithms and some of the utilities on images, the log trail appears on the Log page in the Output window.

Figure 13. Log page of the Output window showing a log trail

To turn off the log mode

1 Select **Help > Program Options** in the MIPAV window. The MIPAV Options dialog box (Figure 12) appears.

2 Clear **Log mode**.

3 Click **Apply**.

BACK TO QUESTIONS

How do I save images in a different format?

Since MIPAV supports read and write access in a number of different file formats and can read still others. There are some MIPAV-only features, for example, allowing users to recover particular volumes of interest. MIPAV can save and later restore important data. Not only does MIPAV support a number of medical image data formats, but it also supports some general purpose formats, which are very help in making presentations.

When you save an image after working on it in MIPAV, **be sure to type the correct extension** at the end of the file name to save the image in the correct format.

Example. If you are saving a DICOM image named Head101, type **DCM** or **IMA** as the extension so that the name of the file is *Head101.dcm*.

The following tables list the image file types that MIPAV supports. For your convenience, you can search for image file types by either of the following:

- Manufacturer or application in Table 1 on page 15
- File extension in Table 2 on page 16

Table 1. Graphics file formats supported by MIPAV listed by manufacturer

Manufacturer or Application	File Extension	Open	Save
Adobe Photoshop	PSD	Yes	Yes
AFNI	BRIK, HEAD	Yes	Yes*
Analyze	IMG	Yes	Yes
Apple Macintosh PICT	PICT	Yes	Yes
Apple QuickTime	MOV, QT	Yes	Yes
Audio/Video Interleave	AVI	Yes	Yes†
BIORAD	PIC	Yes	No
Bruker	2dseq	Yes	No
Cheshire	IMC, IMG	Yes	Yes
DICOM 3.0	DCM, IMA	Yes	Yes
FITS	FTS	Yes	Yes
FreeSurfer Image	COR	Yes	No
FreeSurfer Surface	ASC	Yes	No
GE – Genesis 5X and LX	SIG	Yes	No
Graphics Interchange File	GIF	Yes	No
Image Cytometry Standard (ICS)	ICS	Yes	Yes
InterFile	HDR	Yes	Yes
Joint Photographics Experts Group	JFI, JFIF, JPG, JPEG	Yes	Yes
Laser Scanning Microscope (Zeiss)	LSM	Yes	Yes
Medical Image Network Common Data Form (including ROIs)	MNC	Yes	Yes
Medical Research Council	MRC	Yes	Yes
MICRO-CAT	LOG	Yes	Yes
Microsoft Windows Bitmap	BMP, DIB	Yes	Yes
MIPAV Image	XML	Yes	Yes
MIPAV Lookup Table	LUT	Yes	Yes
MIPAV Transformation Matrix	MTX	Yes	Yes
MIPAV Graph	PLT	Yes	Yes
MIPAV Volume of Interest	VOI, XML	Yes	Yes

Table 1. Graphics file formats supported by MIPAV listed by manufacturer

Manufacturer or Application	File Extension	Open	Save
netCDF and masks	CDF	Yes	Yes
PC Paintbrush	PCX, DCX, PCC	Yes	Yes
Portable Network Graphic	PNG	Yes	Yes
Raw	RAW	Yes	Yes
Siemens – Magnetom Vision	IMA	Yes	Yes
Sun Raster	RS, RAS	Yes	Yes
Tagged Image File Format	TIF, TIFF	Yes	Yes
Truevision Graphics Adapter	ICB, TGA, TPIC, VDA, VST	Yes	Yes
XBitMap	XBM	Yes	Yes
XPixMap	XPM	Yes	Yes
Zeiss-TIFF Topography (LSM 510/LSM 5)	LSM	Yes	No

*. MIPAV does not save extra information with the AFNI file. It only does the "bare minimum."

†. AVIs are saved with encoding options: run-length, MPEG, MPEG-4, QuickTime. However, MIPAV requires the Java Media Framework, which is installed with MIPAV.

Table 2.Graphics file formats supported by MIPAV listed by file extension

File extension	Manufacturer or Application	Open	Save
2dseq	Bruker	Yes	No
ASC	FreeSurfer Surface	Yes	No
AVI	Audio/Video Interleave	Yes	Yes*
BMP	Microsoft Windows Bitmap	Yes	Yes
BRIK	AFNI	Yes	Yes†
CDF	netCDF and masks	Yes	Yes
COR	FreeSurfer Image	Yes	No
DCM	DICOM 3.0	Yes	Yes
DCX	PC Paintbrush	Yes	Yes
DIB	Microsoft Windows Bitmap	Yes	Yes
FTS	FITS	Yes	Yes
GIF	Graphics Interchange File	Yes	No
HDR	InterFile	Yes	Yes

Table 2.Graphics file formats supported by MIPAV listed by file extension (continued)

File extension	Manufacturer or Application	Open	Save
HEAD	AFNI	Yes	Yes‡
ICB	Truevision Graphics Adapter	Yes	Yes
ICS	Image Cytometry Standard (ICS)	Yes	Yes
IMA	DICOM 3.0	Yes	Yes
IMA	Siemens – Magnetom Vision	Yes	Yes
IMC	Cheshire	Yes	Yes
IMG	Analyze	Yes	Yes
IMG	Cheshire	Yes	Yes
JFI	Joint Photographics Experts Group	Yes	Yes
JFIF	Joint Photographics Experts Group	Yes	Yes
JPEG	Joint Photographics Experts Group	Yes	Yes
JPG	Joint Photographics Experts Group	Yes	Yes
LOG	MICRO-CAT	Yes	Yes
LSM	Laser Scanning Microscope (Zeiss)	Yes	Yes
LSM	Zeiss-TIFF Topography (LSM 510/LSM 5)	Yes	No
LUT	MIPAV Lookup Table	Yes	Yes
MNC	Medical Image Network Common Data Form (including ROIs)	Yes	Yes
MOV	Apple QuickTime	Yes	Yes
MRC	Medical Research Council	Yes	Yes
MTX	MIPAV Transformation Matrix	Yes	Yes
PCX	PC Paintbrush	Yes	Yes
PIC	BIORAD	Yes	No
PICT	Apple Macintosh PICT	Yes	Yes
PLT	MIPAV Graph	Yes	Yes
PNG	Portable Network Graphic	Yes	Yes
PSD	Adobe Photoshop	Yes	Yes
QT	Apple QuickTime	Yes	Yes
RAW	Raw	Yes	Yes
RAS	Sun Raster	Yes	Yes

Table 2.Graphics file formats supported by MIPAV listed by file extension (continued)

File extension	Manufacturer or Application	Open	Save
RS	Sun Raster	Yes	Yes
SIG	GE – Genesis 5X and LX	Yes	No
TGA	Truevision Graphics Adapter	Yes	Yes
TIF	Tagged Image File Format	Yes	Yes
TIFF	Tagged Image File Format	Yes	Yes
TPIC	Truevision Graphics Adapter	Yes	Yes
VDA	Truevision Graphics Adapter	Yes	Yes
VOI	MIPAV volume of interest	Yes	Yes
VST	Truevision Graphics Adapter	Yes	Yes
XBM	XBitMap	Yes	Yes
XML	MIPAV volume of interest	Yes	Yes
XML	MIPAV image	Yes	Yes
XPM	XPixMap	Yes	Yes

*. AVIs are saved with encoding options: run-length, MPEG, MPEG-4, QuickTime. However, MIPAV requires the Java Media Framework, which is installed with MIPAV.
†. MIPAV does not save extra information with the AFNI file. It only does the “bare minimum.”
‡. MIPAV does not save extra information with the AFNI file. It only does the “bare minimum.”


BACK TO QUESTIONS

How do I combine two images for alphablending?

Alphablending is a technique that adds transparency information to translucent objects. When two images share a window, you can adjust the alphablending settings so that you can see a blend of both images and can compare overlapping regions in two datasets.

To use the alphablending function

1 Open one or more images.

2 Click on the image you want to make the *active image*.

3 Click **File > Load,** and then click one of the following (refer to Figure 14):

- **Image(B) from Frame**—To load an already opened image
- **Image(B) from File**—To load an image from an image file
- **Multifile(B)**—To load more than one image
- **Blank image(B)**—To load a blank image

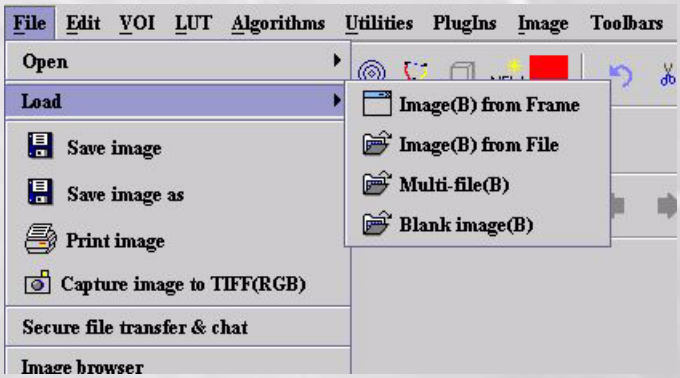

Figure 14. File > Load menu

The MIPAV window expands to include the Active Image and Alphablending slider (Figure 15), and the active image window contains all the images selected.

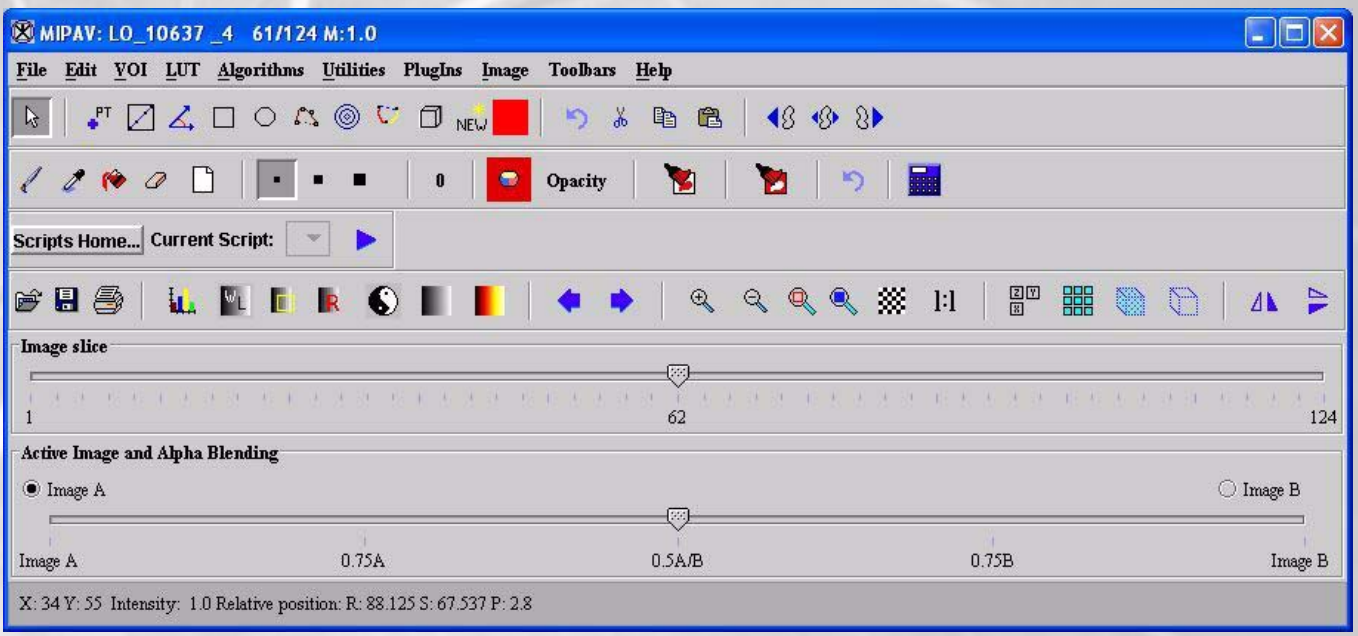

Figure 15. MIPAV window displaying the Active Image and Alphablending slider

4 Adjust the alphablending slider at the bottom of the MIPAV window to reveal all of the images.

5 Move the slider to select the best ratio for the datasets of interest.

The level of translucency for one image is inversely proportional to the other. Thus, if image A is 75 percent transparent (25 percent opaque), then image B is 75 percent opaque (25 percent transparent).

BACK TO QUESTIONS